

4-5 Worksheet #2
Calculus AB

Name _____ # _____

Evaluate the following integrals:

1) $\int \sqrt{x} \cos \sqrt{x^3} dx$

1) _____

2) $\int \sqrt{3x-2} dx$

2) _____

3) $\int \sqrt[3]{8t+5} dt$

3) _____

4) $\int (3z+1)^4 dz$

4) _____

$$5) \int v^2 \sqrt{v^3 - 1} dv$$

$$5) \underline{\hspace{10cm}}$$

$$6) \int \frac{x}{\sqrt[3]{1 - 2x^2}} dx$$

$$6) \underline{\hspace{10cm}}$$

$$7) \int (s^2 + 1)^2 ds$$

$$7) \underline{\hspace{10cm}}$$

$$8) \int \frac{(\sqrt{x} + 3)^4}{\sqrt{x}} dx$$

$$8) \underline{\hspace{10cm}}$$

$$9) \int \frac{t-2}{(t^2 - 4t + 3)^3} dt$$

$$9) \underline{\hspace{1cm}}$$

$$10) \int 3 \sin(4x) dx$$

$$10) \underline{\hspace{1cm}}$$

$$11) \int \cos(4x - 3) dx$$

$$11) \underline{\hspace{1cm}}$$

$$12) \int v \sin(v^2) dv$$

$$12) \underline{\hspace{1cm}}$$

$$13) \int \cos(3x) \sqrt[3]{\sin(3x)} \, dx$$

$$13) \underline{\hspace{10cm}}$$

$$14) \int (\sin x + \cos x)^2 \, dx$$

(Hint: $\sin 2\theta = 2 \sin \theta \cos \theta$)

$$14) \underline{\hspace{10cm}}$$

$$15) \int \sin x (1 + \cos x)^2 \, dx$$

$$15) \underline{\hspace{10cm}}$$

$$16) \int \frac{\sin x}{\cos^4 x} \, dx$$

$$16) \underline{\hspace{10cm}}$$

$$17) \int \frac{\cos t}{(1 - \sin t)^2} dt$$

17) _____

$$18) \int \sec^2(3x - 4) dx$$

18) _____

$$19) \int \sec^2(3x) \tan(3x) dx$$

19) _____

$$20) \int \frac{1}{\sin^2(5x)} dx$$

20) _____

$$21) \int x \cot(x^2) \csc(x^2) dx$$

21) _____

22) Solve the differential equation subject to the given conditions:

$$f'(x) = \sqrt[3]{3x+2}; \quad f(2)=9$$

22) _____

23) Solve the differential equation subject to the given conditions:

$$f''(x) = 16\cos(2x) - 3\sin x; \quad f(0) = -2; \quad f'(0) = 4$$

23) _____

24) Evaluate the integral $\int (x+4)^2 dx$

a) by the method of substitution

24a) _____

b) by expanding the integrand

24b) _____

c) In what way do the constants of integration differ?

24c) _____